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EXAMINER	
LOUIE, MANDY C	

ART UNIT	PAPER NUMBER
1792	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/559,580	OKUDA ET AL.	
	Examiner	Art Unit	
	MANDY C. LOUIE	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 June 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,8,14,15,17-20,22-31 and 33-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,8,14,15,17-20,22-31 and 33-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *03/20/09*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 1 is objected to because of the following informalities: "in a water" should be changed to "in water". Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1-5, 8, 14-15, 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. Regarding claim 1, the limitation "Step 1 is a liquid or a solution of a soluble polymer" it is unclear whether the limitation indicates: a liquid, a solution of a soluble polymer, or a solution of a paraffin…(to the end of "chemical reaction") OR a liquid or a solution of a soluble polymer, or a liquid or a solution of a paraffin…(to the end of "chemical reaction").

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1, 2, 5, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohya [US 2002/0040522] in view of Hiraoka [US 2003/0022102].

Regarding claim 1, Ohya teaches a process for producing a composite ceramic printing wiring board by making a penetration hole, producing a resin composite ceramic substrate and forming printed wiring networks on both surfaces of the substrate (producing a perforated porous base) [abstract] where the method includes impregnating the porous structure of the base with a liquid or solution [0056-0057], forming a solid substance from the liquid or the solution impregnated [0058, 0017], and forming a plurality of perforations extending through from the first surface of the porous base having the solid substance within the porous structure to the second surface in the porous base (forming through holes) [0059, 0031], and removing the solid substance from the porous base by decomposition (dissolving) [0017, 0061] which would intrinsically be removed from the interior of the porous structure, wherein the liquid or the solution is a paraffin (wax) that is at a solid state at room temperature (temperature ranging from 15 to 30°C) [0056, 0017]. Ohya appears to be silent in teaching the porous base is of resin. Hiraoka remedies this.

Hiraoka teaches a method of manufacturing composite member for a wiring board [abstract] where the prior art teaches the porous substrate for the wiring board can be of organic (i.e. resin) or inorganic (i.e. ceramic) insulating material [0181-0188], wherein it would have been obvious to one of ordinary skill in the art that either types of material for forming the porous base would be operable in the art. Moreover, it would have been obvious to one of ordinary skill in the art to elect an organic material for the porous base with the suggestion of using a resin material to form a flexible wiring board if desired [Hiraoka, 0190].

Regarding claim 2, Ohya in view of Hiraoka teaches the porous resin base is a porous resin sheet [Hiraoka, 0190].

Regarding claim 5, Ohya in view of Hiraoka teaches the liquid is a substance having a solidifying point or a melting point within a range of -150 to 150°C (room temperature) [Ohya, 0017].

Regarding claim 17, Ohya in view of HIraoka teaches the perforations are formed by means of a mechanically perforating method [Ohya, 0059].

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohya in view of Hiraoka and further in view of Korleski [US 5753358].

Regarding claim 3, Ohya in view of Hiraoka teaches the porous resin sheet may be of polytetrafluoroethylene manufactured by an elongation method, but does not specifically teach expanded polytetrafluoroethylene sheet having a microstructure comprising fibrils and nodes connected to each other by the fibrils. Korleski remedies this.

Regarding claim 3, Korleski teaches a composite material of expanded fluoropolymer with nodes and interconnected fibrils [abstract] such as expanded polytetrafluoroethylene which can be used in printed wiring boards [col 3, ln 59-61].

It would have been obvious to one of ordinary skill in the art at the time of the invention to use expanded polyetrafluoroethylene sheet as the porous base. One would have been motivated to do so to gain the material advantageous as suggested by Korleski (i.e. controlled thickness, strong and easy to handle [col 7, ln 45-63]).

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohya in view of Hiraoka and further in view of Weege [Basic Impregnation Techniques].

Teaching of Ohya in view of Hiraoka is aforementioned, and further teach using a vacuum impregnation technique [0057]; however, the prior art is silent to use casting or a dipping method for impregnation. Weege remedies this.

Regarding claim 4, Weege teaches basic impregnation techniques [title], where dipping [pg 710, col 1] and full encapsulation (casting) [pg 715, col 1] are disclosed.

It would have been obvious to one with ordinary skill in the art at the time of the invention to use either dipping or casting for impregnation. One would have been motivated to do so for various advantages such as increasing simplicity and ease [Weege, pg 710, col 1], cost-effectiveness [Weege, pg 711, col 2], or environmental friendliness [Weege, pg 715, col 1]. Moreover, it would have been obvious to one of ordinary skill in the art that such techniques (i.e. vacuum impregnation, dipping and casting) would all be operable in the art.

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohya in view of Hiraoka and further in view of Claypoole [US 2164764].

Teaching of Ohya in view of Hiraoka is aforementioned, but appears to be silent to impregnating the liquid at a temperature exceeding the solidifying point or melting point thereof into the porous structure and melting the substance by exceeding the solid or melting point of the substance. Claypoole remedies this.

Regarding claim 8, Claypoole teaches a method of impregnating a porous gasket with wax, wherein the wax is heated above the melting point of the wax to impregnate

the porous base, and solidified at normal temperature to act as a mask, and removing the wax from the porous base by heating the wax to a temperature above the melting point of the wax [claim 1 and 2].

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the impregnation technique as taught by Claypoole to impregnate a porous base. One would have been motivated to do so by the simplicity and ease of the method. Moreover, it would have been obvious to one of ordinary skill in the art that such impregnation techniques would all be well known and operable in the art to the other techniques described by the prior art.

7. Claims 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohya in view of Hiraoka and further in view of Fukushima [US 3483283].

Teaching of Ohya in view of Hiraoka is aforementioned, but appears to be silent in teaching the liquid or solution containing the compound capable of forming a solid substance by a chemical reaction is a liquid or a solution also containing, in addition to the polymerizable monomer, a polymer obtained by the polymerization of the polymerizable monomer, wherein the monomer is an acrylate or methacrylate. Fukushima remedies this.

Regarding claim 14, Fukushima teaches a process for producing sheet material [title], wherein the method includes impregnating a porous sheet with a binder that is extractable with a solvent [abstract] where the binder may be temporarily set (polymerized to a solid substance) [col 1, ln 39-41].

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a solid substance as taught by Fukushima. One would have been motivated to do so in order to mask and prevent deformation of the base during subsequent processing steps such as during coating [Fukushima, col 1, ln 51-63], wherein such advantages would also be adaptable to machining.

Regarding claim 15, Fukushima teaches the binder may be acrylates [col 2, ln 48-49] (which intrinsically have acrylate monomers).

8. Claims 18-19, 24, 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohya in view of Hiraoka and further in view of Schneble [US 3799816].

Teaching of Ohya in view of Hiraoka of claim 1 is aforementioned, but appears to be silent in applying a catalyst facilitating a reducing reaction of a metal ion to the surfaces of the composite sheet including the inner wall surfaces of the respective perforations, and using the catalyst applied to and remaining on the inner wall surfaces of the respective perforations in the porous resin base to apply a conductive metal to the inner walls surfaces. Schneble remedies this.

Regarding 18, Schneble teaches a method of metallizing insulating bases such as circuit boards [abstract], where the method includes applying a catalyst (seeder)[col 2, ln 50-60] which would innately facilitate a reducing reaction of a metal ion to the surface of the composite sheet including the inner wall surfaces of the respective perforations, and using the catalyst applied to and remaining on the inner wall surfaces of the respective perforations in the porous resin base to apply a conductive metal to

the inner walls surfaces [col 4, ln 10-20, Fig. 1]. (Furthermore, since the prior art suggests it would be desirable to form conductive coating within the perforations by maintaining masks to protect certain areas [Schneble, col 7, ln 60-75; col 8, ln 1-2], it would have been apparent to one of ordinary skill in the art to maintain the solid substance within the pores to act as a mask to prevent coating within the pores).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use electroless plating to deposit metal within the perforation. Such method would be well known in the art, and is particular useful for selective metallizing an area on a substrate [col 9, ln 30-38], which would be important in forming wiring in electronic devices such as circuit boards. Moreover, such advantages of using electroless plating are also well known (i.e. cost effective, and low temperature deposition).

Regarding claim 19, Ohya in view of Hiraoka and Schneble teaches the porous resin base is a porous resin sheet [Hiraoka, 0190].

Regarding claim 24, Ohya in view of Hiraoka and Schneble teaches the plurality of the perforations are formed in the composite sheet by means of mechanically perforating method [Ohya, 0059].

Regarding claim 27, Ohya in view of Hiraoka and Schneble teaches the conductive metal is applied to the inner wall surfaces of the perforations by electroless plating [Schneble col 3, ln 30-33].

Regarding claim 28, Ohya in view of Hiraoka and Schneble teaches the porous resin base with the inner wall surfaces of the perforation made conductive is an anisotropically conductive sheet that have conductive portions formed by the conductive

metal applied to a portion of the base in the inner wall surfaces of the plurality of the perforation extending through the first surface to the second surface and imparting conductivity only to the thickness-wise direction of the sheet by the conductive portions [Schneble, Fig. 1; Ohya, abstract].

9. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohya in view of Hiraoka and Schneble and further in view of Korleski [US 5753358].

Teaching of Ohya in view of Hiraoka and Schneble is aforementioned, but appears to be silent to the limitations of claim 20. Korleski remedies this.

Regarding claim 20, Korleski teaches a composite material of expanded fluoropolymer with nodes and interconnected fibrils [abstract] such as expanded polytetrafluoroethylene which can be used in printed wiring boards [col 3, ln 59-61].

It would have been obvious to one of ordinary skill in the art at the time of the invention to use expanded polyetrafluoroethylene sheet as the porous base. One would have been motivated to do so to gain the material advantageous as suggested by Korleski (i.e. controlled thickness, strong and easy to handle [col 7, ln 45-63]).

10. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohya in view of Hiraoka and Schneble and further in view of Weege [Basic Impregnation Techniques].

Teaching of Ohya in view of Hiraoka and Schneble is aforementioned, and further teach using a vacuum impregnation technique [0057] wherein the paraffin is impregnated into the porous structure by vaporizing the solvent [0056-0059]; however,

the prior art is silent to use casting or a dipping method for impregnation. Weege remedies this.

Regarding claim 22, Weege teaches basic impregnation techniques [title], where dipping [pg 710, col 1] and full encapsulation (casting) [pg 715, col 1] are disclosed. Moreover, it would have been apparent to one of ordinary skill in the art that either dipping or casting would allow for both sides of the base to be coated and impregnated, thereby innately having a solid layer of impregnating substance on both sides.

It would have been obvious to one with ordinary skill in the art at the time of the invention to use either dipping or casting for impregnation. One would have been motivated to do so for various advantages such as increasing simplicity and ease [Weege, pg 710, col 1], cost-effectiveness [Weege, pg 711, col 2], or environmental friendliness [Weege, pg 715, col 1]. Moreover, it would have been obvious to one of ordinary skill in the art that such techniques (i.e. vacuum impregnation, dipping and casting) would all be operable in the art.

11. Claims 23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohya in view of Hiraoka and Schneble and Weege and further in view of Fukushima [US 3483283].

Teaching of Ohya in view of Hiraoka and Schneble and Weege is aforementioned, but appears to be silent in teaching the liquid or solution containing the compound capable of impregnating the base with the polymerizable monomer undergoing a polymerization reaction by heat or light to form a polymer on both surfaces of the porous resin. Fukushima remedies this.

Regarding claim 23, Fukushima teaches a process for producing sheet material [title], wherein the method includes impregnating a porous sheet with a binder that is extractable with a solvent [abstract] where the binder may be temporarily set (polymerized to a solid substance) [col 1, ln 39-41] by means of a heated press [col 1, ln 40; col 3, ln 1-10].

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a solid substance as taught by Fukushima. One would have been motivated to do so in order to mask and prevent deformation of the base during subsequent processing steps such as during coating [Fukushima, col 1, ln 51-63], wherein such advantages would also be adaptable to machining.

Regarding claim 25, the prior art teaches the solid substance is dissolved and removed by using a solvent that does not dissolve or hardly dissolve the base [col 1, ln 45-46].

12. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohya in view of Hiraoka and Schneble and further in view of Claypoole [US 2164764].

Teaching of Ohya in view of Hiraoka and Schneble is aforementioned, but appears to be silent to impregnating the liquid at a temperature exceeding the solidifying point or melting point thereof into the porous structure and melting the substance by exceeding the solid or melting point of the substance. Claypoole remedies this.

Regarding claim 26, Claypoole teaches a method of impregnating a porous gasket with wax, wherein the wax is heated above the melting point of the wax to impregnate the porous base, and solidified at normal temperature to act as a mask, and

removing the wax from the porous base by heating the wax to a temperature above the melting point of the wax [claim 1 and 2].

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the impregnation technique as taught by Claypoole to impregnate a porous base. One would have been motivated to do so by the simplicity and ease of the method. Moreover, it would have been obvious to one of ordinary skill in the art that such impregnation techniques would all be well known and operable in the art to the other techniques described by the prior art.

13. Claims 29-30, 37, 39-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohya in view of Hiraoka and further in view of Echigo [US 2002/0029906] and Schneble [US 3799816].

Teaching of Ohya in view of Hiraoka of claim 1 is aforementioned, but appears to be silent in laminating porous resin layers as masks on both surface of a porous resin base to form a laminate of a 3-layer structure and removing the masks from the base. Echigo remedies this.

Regarding claim 29, Echigo teaches a process for manufacturing a circuit board using a removable mask film [title], where the masks are applied to both sides of the substrate [abstract], preferably by a lamination process [0026], where the substrate is a porous insulating substrate [0008]. Furthermore, Echigo teaches the removable film can be made of polyimide [0024] (porous resin in light of applicant's specification, paragraph 0074).

It would have been obvious to one with ordinary skills in the art at the time of the invention to laminate removable masking layers on both sides of the base. One would have been motivated to do so to decrease the effects of residual strain and improve fine dimensional accuracy [Echigo, abstract] for a better product.

However, Ohya in view of Hiraoka and Echigo appears to be silent in applying a catalyst facilitating a reducing reaction of a metal ion to the surfaces of the composite sheet including the inner wall surfaces of the respective perforations, and using the catalyst applied to and remaining on the inner wall surfaces of the respective perforations in the porous resin base to apply a conductive metal to the inner walls surfaces. Schneble remedies this.

Regarding 29, Schneble teaches a method of metallizing insulating bases such as circuit boards [abstract], where the method includes applying a catalyst (seeder)[col 2, ln 50-60] which would innately facilitate a reducing reaction of a metal ion to the surface of the composite sheet including the inner wall surfaces of the respective perforations, and using the catalyst applied to and remaining on the inner wall surfaces of the respective perforations in the porous resin base to apply a conductive metal to the inner walls surfaces [col 4, ln 10-20, Fig. 1]. (Furthermore, since the prior art suggests it would be desirable to form conductive coating within the perforations by maintaining masks to protect certain areas [Schneble, col 7, ln 60-75; col 8, ln 1-2], it would have been apparent to one of ordinary skill in the art to maintain the solid substance within the pores to act as a mask to prevent coating within the pores).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use electroless plating to deposit metal within the perforation. Such method would be well known in the art, and is particular useful for selective metallizing an area on a substrate [col 9, ln 30-38], which would be important in forming wiring in electronic devices such as circuit boards. Moreover, such advantages of using electroless plating are also well known (i.e. cost effective and low temperature deposition).

Regarding claim 30, the prior art teaches the base is a porous resin sheet [Hiraoka 0190].

Regarding claim 37, Ohya in view of Hiraoka and Echigo and Schneble teaches the perforations are formed by means of a mechanically perforating method [Ohya, 0059].

Regarding claim 39, Ohya in view of Hiraoka and Echigo and Schneble teaches the conductive metal is applied to the inner wall surfaces of the perforations by electroless plating [Schneble col 3, ln 30-33].

Regarding claim 40, Ohya in view of Hiraoka and Echigo and Schneble teaches the porous resin base with the inner wall surfaces of the perforation made conductive is an anisotropically conductive sheet that have conductive portions formed by the conductive metal applied to a portion of the base in the inner wall surfaces of the plurality of the perforation extending through the first surface to the second surface and imparting conductivity only to the thickness-wise direction of the sheet by the conductive portions [Schneble, Fig. 1; Ohya, abstract].

14. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohya in view of Hiraoka and Echigo and Schneble and further in view of Korleski [US 5753358].

Regarding claim 31, the prior art teaches the porous resin sheet may be of polytetrafluoroethylene manufactured by an elongation method, but does not specifically teach expanded polytetrafluoroethylene sheet having a microstructure comprising fibrils and nodes connected to each other by the fibrils. Korleski remedies this.

Regarding claim 31, Korleski teaches a composite material of expanded fluoropolymer with nodes and interconnected fibrils [abstract] such as expanded polytetrafluoroethylene which can be used in printed wiring boards [col 3, ln 59-61].

It would have been obvious to one of ordinary skill in the art at the time of the invention to use expanded polytetrafluoroethylene sheet as the porous base. One would have been motivated to do so to gain the material advantageous as suggested by Korleski (i.e. controlled thickness, strong and easy to handle [col 7, ln 45-63]).

15. Claims 33-34, 36, and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohya in view of Hiraoka and Echigo and Schneble and further in view of Fukushima [US 3483283].

Teaching of prior art is aforementioned, but appears to be silent in teaching the liquid or solution containing the compound capable of forming a solid substance by a chemical reaction is a liquid or a solution also containing, in addition to the polymerizable monomer, a polymer obtained by the polymerization of the polymerizable monomer, wherein the monomer is an acrylate or methacrylate. Fukushima remedies this.

Regarding claim 33, Fukushima teaches a process for producing sheet material [title], wherein the method includes impregnating a porous sheet with a binder that is extractable with a solvent [abstract] where the binder may be temporarily set (polymerized to a solid substance) [col 1, ln 39-41].

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a solid substance as taught by Fukushima. One would have been motivated to do so in order to mask and prevent deformation of the base during subsequent processing steps such as during coating [Fukushima, col 1, ln 51-63], wherein such advantages would also be adaptable to machining.

Regarding claim 34, Fukushima teaches the binder may be acrylates [col 2, ln 48-49] (which intrinsically have acrylate monomers).

Regarding claim 36, the prior art teaches a process for producing sheet material [Fukushima, title], wherein the method includes impregnating a porous sheet with a binder that is extractable with a solvent [Fukushima, abstract] where the binder may be temporarily set (polymerized to a solid substance) [Fukushima, col 1, ln 39-41] by means of a heated press [Fukushima, col 1, ln 40; col 3, ln 1-10].

Regarding claim 38, the prior art teaches the solid substance is dissolved and removed by using a solvent that does not dissolve or hardly dissolve the base [Fukushima, col 1, ln 45-46].

16. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohya in view of Hiraoka and Echigo and Schneble and further in view of Weege [Basic Impregnation Techniques].

Teaching of Ohya in view of Hiraoka and Echigo and Schneble is aforementioned, and further teach using a vacuum impregnation technique [0057] wherein the paraffin is impregnated into the porous structure by vaporizing the solvent [0056-0059]; however, the prior art is silent to use casting or a dipping method for impregnation. Weege remedies this.

Regarding claim 35, Weege teaches basic impregnation techniques [title], where dipping [pg 710, col 1] and full encapsulation (casting) [pg 715, col 1] are disclosed. Moreover, it would have been apparent to one of ordinary skill in the art that either dipping or casting would allow for both sides of the base to be coated and impregnated, thereby innately having a solid layer of impregnating substance on both sides.

It would have been obvious to one with ordinary skill in the art at the time of the invention to use either dipping or casting for impregnation. One would have been motivated to do so for various advantages such as increasing simplicity and ease [Weege, pg 710, col 1], cost-effectiveness [Weege, pg 711, col 2], or environmental friendliness [Weege, pg 715, col 1]. Moreover, it would have been obvious to one of ordinary skill in the art that such techniques (i.e. vacuum impregnation, dipping and casting) would all be operable in the art.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct

from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

1. Claims 1-5, 8, 14-15, 17-20, 22-31, 33-40 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-13 of copending Application No. 11/660993 in view of Ohya. 11/660993 appears to be silent in teaching the paraffin is in solid state at a temperature ranging from 15-30 degrees Celsius. Ohya remedies this. Teaching of Ohya in paragraph 3 is applied. It would have been obvious to one of ordinary skill in the art to use a substance that would solidify at such a temperature range. One would have been motivated to do so in order to reduce energy cost for raising or decreasing the temperature to solidify the substance.

This is a provisional obviousness-type double patenting rejection.

Response to Arguments

17. Obviousness type double patenting for application 10/551459 rejection is withdrawn due to submission of a Terminal Disclaimer.

18. Applicant's arguments with respect to claims 1-5, 8, 14-15, 17-20, 22-31, 33-40 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

19. No claim is allowed.

20. Claim 1 is objected for the reasons aforementioned.

21. Claims 1-5, 8, 14-15, 17-20, 22-31, 33-40 are rejected for the reasons aforementioned.

22. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MANDY C. LOUIE whose telephone number is

(571)270-5353. The examiner can normally be reached on Monday to Friday, 7:30AM - 5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571)272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. C. L./
Examiner, Art Unit 1792

/Timothy H Meeks/
Supervisory Patent Examiner, Art Unit 1792